

# ONKYO SERVICE MANUAL

## SYNTHESIZED FM STEREO/AM TUNER MODEL T-401



### Black and Silver models

BHMDN, BHMD	120V AC, 60 Hz
BHMP, MP	230V AC, 50Hz
BHMW	120/220 V AC, 50/60Hz
BHMQA	240V AC, 50 Hz

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\Delta$  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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**ONKYO**  
**AUDIO COMPONENTS**

# SPECIFICATIONS

## FM:

Tuning Range:	87.9-107.9MHz(200kHz steps: U.S.A model) 87.5-108.0MHz(50kHz steps: European model) 87.9-107.9MHz(200kHz steps) or 87.5-108.0MHz(50kHz steps) (Worldwide model)
Usable Sensitivity:	Mono: 11.2dBf, 1.0 $\mu$ V IHF 0.9 $\mu$ V 75ohms DIN Stereo: 2.0 $\mu$ V 75ohms Mono: 11.2dBf, 2.0 $\mu$ V IHF (120V model) Stereo: 17.2dBf, 4.0 $\mu$ V (120V model)
50dB Quieting Sensitivity:	Mono: 1.7 $\mu$ V 75ohms Stereo: 1.7 $\mu$ V 75ohms Mono: 16.1dBf, 3.5 $\mu$ V (120V model) Stereo: 36.1dBf, 35 $\mu$ V (120V model)
Capture Ratio:	1.5dB
Image Rejection Ratio:	40dB (120V model) 80dB (Other models)
IF Rejection Ratio:	90dB
Signal-to-Noise Ratio:	Mono: 73dB Stereo: 66dB
Alternate Channel	
Attenuation:	50dB IHF ( $\pm$ 400kHz) (120V model)
Selectivity:	55dB DIN ( $\pm$ 300kHz, 40kHz dev.) (Other models)
AM suppression Ratio:	50dB

Total Harmonic Distortion: Mono: 0.1%

Stereo: 0.2%

Frequency Response: 30-15,000Hz  $\pm$ 1.5dB

Stereo Separation: 40dB at 1kHz  
30dB at 70-10,000Hz

Muting Level: 2.0  $\mu$ V, 75ohm  
17.2dBf, 4.0  $\mu$ V

Output Voltage: 500mV (120V model)  
750mV (Other models)

## AM:

Tuning Range: 530-1710kHz(10kHz steps) (U.S.A. model)  
522-1611kHz( 9Hz steps) (European model)  
530-1620kHz(10kHz steps) or  
531-1602kHz( 9kHz steps) (Worldwide model)

Usable Sensitivity: 25  $\mu$ V

Image Rejection Ratio: 40dB

IF Rejection Ratio: 40dB

Signal-to-Noise Ratio: 40dB

Harmonic Distortion: 0.8%

Output voltage: 150mV

## GENERAL:

Dimensions(W×H×D): 455 × 75.5 × 306mm  
17-15/16" × 2-15/16" × 12-1/16"

Weight: 3.4kg., 7.5 lbs.

Specifications and features are subject to change without notice.

# SERVICE PROCEDURES

## 1. Safety-check out

(Only U.S.A. model)

After correcting the original service problem,perform the following safety check before releasing the set to the customer.

Connect the insulating-resistance tester between the plug of power supply cord and chassis.

Specifications: 3.3Mohm  $\pm$ 10% at 500V.

## 2. Memory preservation

This unit does not require memory preservation batteries. A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged. The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory,the power switch must be turned on and off a few times each month to keep the back-up system operative. The period of time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorter when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

## 3. Voltage Selector (Back Panel)

W models are equipped with a voltage selector to conform with local power supplies. Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on. This switch is set to 220V at the factory. Voltage is changed by sliding the groove in the switch with a screwdriver to the right or left. Confirm that the switch has been moved all the way to the right or left before turning the power switch on. Models without a voltage selector can only be used in areas where the power supply is the same as that of the unit.

## 4. Tuning Step Frequency Switch (Back Panel)

W models are equipped with a switch for the AM (9kHz/10kHz) and FM (50kHz/100kHz) bands. The switch should be set to the proper steps for the radio broadcast frequencies in your area.

## 5. Changing the band step

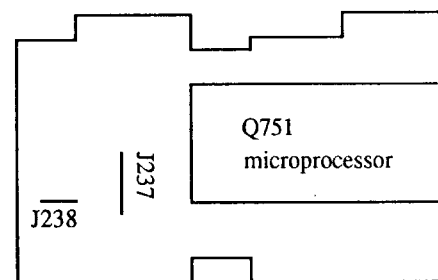
With the exception of the models below, a BAND STEP selector switch is not provided.

### FM

MODEL	BAND STEP	J273
UD	200kHz $\rightarrow$ 50kHz	Open
UP/UQ	50kHz $\rightarrow$ 200kHz	Short

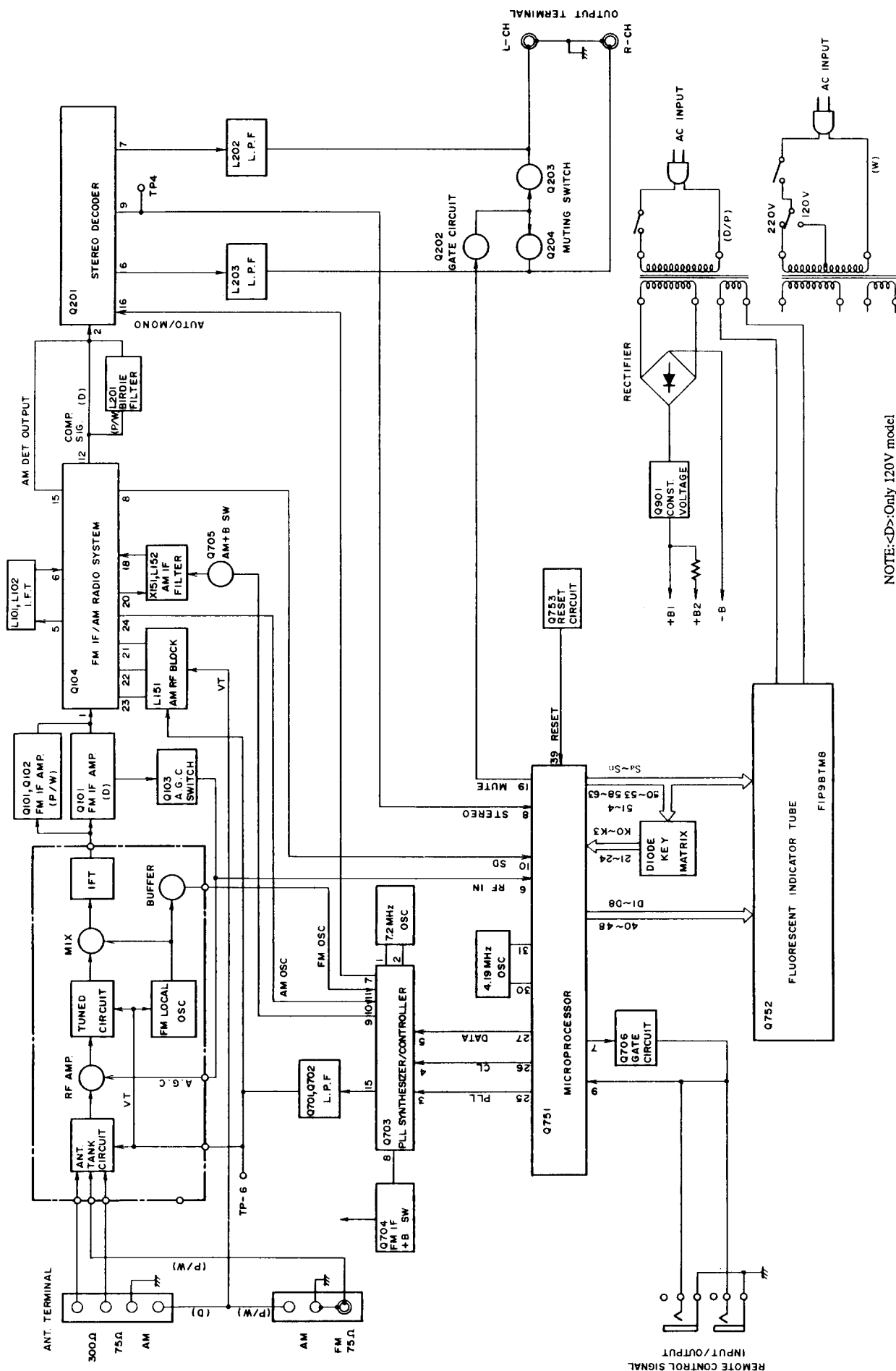
### AM

MODEL	BAND STEP	J238
UD	10kHz $\rightarrow$ 9kHz	Short
UP/UQ	9kHz $\rightarrow$ 10kHz	Open

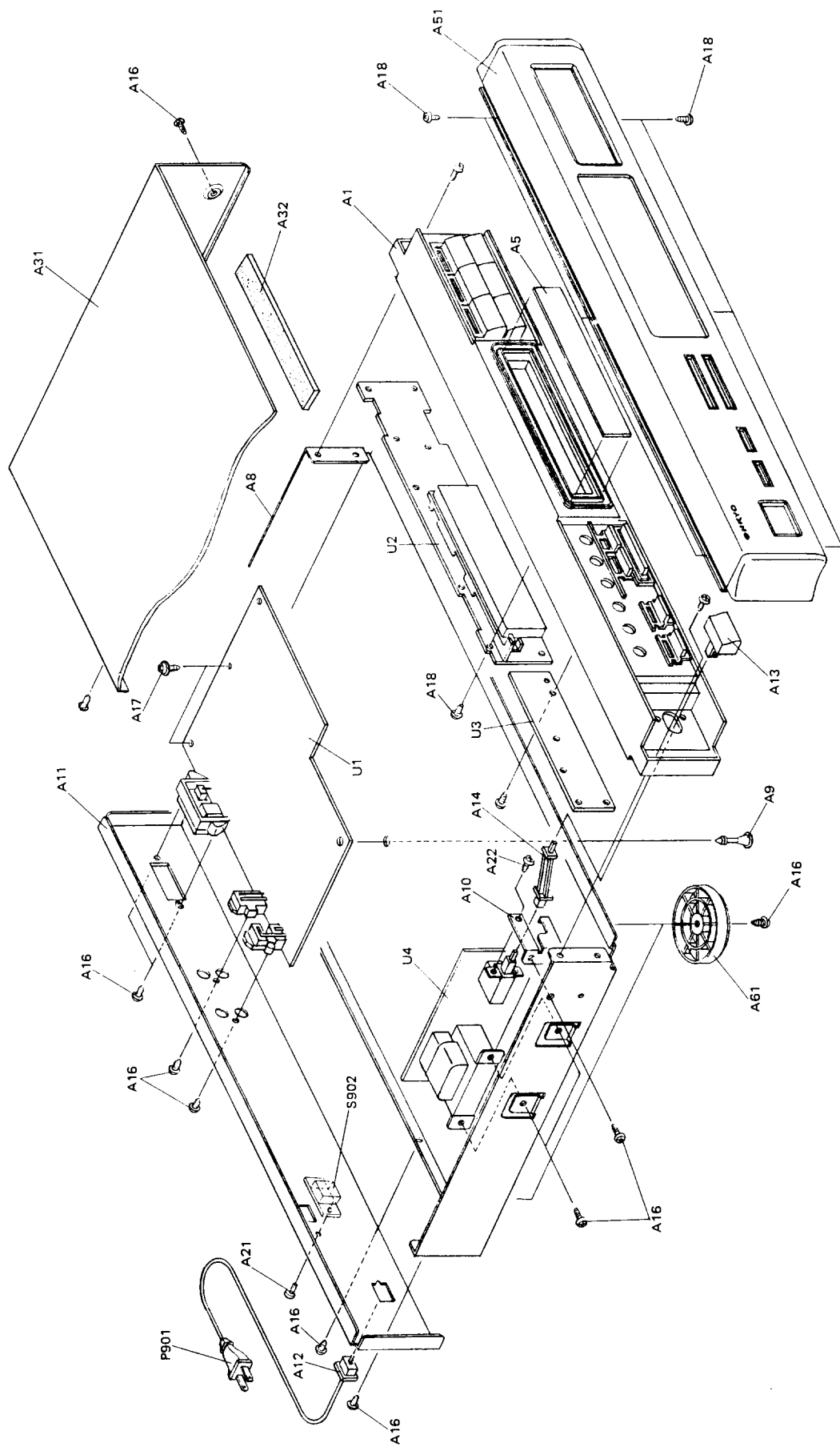


DISPLAY CIRCUIT PCB

## BLOCK DIAGRAM



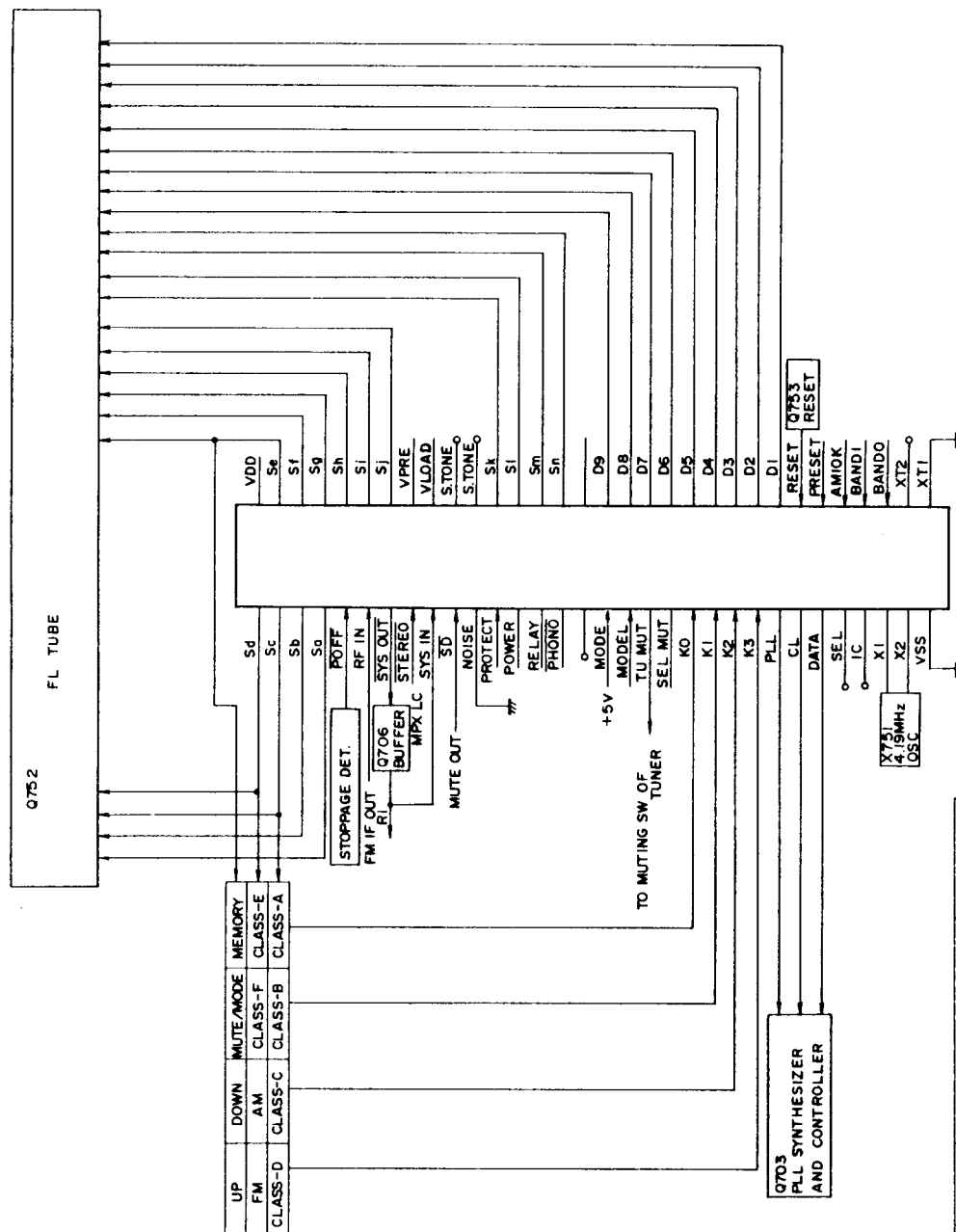
## EXPLODED VIEW



## PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
A1	27110678Y	Front bracket <B>	U1	<del>1A339500-3</del>	<del>NARF-4098-3A,Main circuit pc board ass'y &lt;D&gt;</del>
	27110679Y	Front bracket <S>		1A339598-3A	NARF-4098-3A,Main circuit pc board ass'y <P/Q>
A5	28191579A	Clear plate		1A339598-3B	NARF-4098-3B,Main circuit pc board ass'y <W>
A8	27100230A	Chassis	U2	<del>1A339500-3</del>	<del>NADIS-4099-3,Display circuit pc board ass'y &lt;D&gt;</del>
A9	27190511	KGLS-16R,Holder		1A339599-3A	NADIS-4099-3A,Display circuit pc board ass'y <P/W>
A10	27141468	Bracket,power		1A339599-3B	NADIS-4099-3B,Display circuit pc board ass'y <Q>
A11	27121539Y	Back panel <D>	U3	1A339500-3	NASW-4100-1,Operation switch pc board ass'y
	27121540Y	Back panel <P>	U4	1A339501-3	NAPS-4101-3,Power supply circuit pc board ass'y <D>
	27121542Y	Back panel <W>		1A339501-3A	NAPS-4101-3A,Power supply circuit pc board ass'y <P>
	27121547Y	Back panel <Q>		1A339501-3B	NAPS-4101-3B,Power supply circuit pc board ass'y <W>
A12	27300750	△ Bushing		1A339501-3C	NAPS-4101-3C,Power supply circuit pc board ass'y <Q>
A13	28324140	Knob,power <B>	NOTE:<B>:Black model only <S>:Silver model only <D>:120V model only <P>:230V model only <Q>:240V model only <W>:Worldwide model only		
	28324184	Knob,power <S>			
A14	27260294	Joint,power			
A16	834430088	3TTS+8B(BC),Self-tapping screw			
A17	831130088	3TTW+8B,Self-tapping screw			
A18	833430080	3TTP+8P(BC),Self-tapping screw			
A21	82143006	3P+6FN(BC),Pan head screw <W>			
A22	82143006	3P+6FN(BC),Pan head screw			
A31	28184474	Top cover			
A32	28140837	0.9×250×10,Cushion			
A51	1A339701K	Front panel ass'y <B>			
	1A340701K	Front panel ass'y <S>			
	28125230AY	End cap L			
	28125231AY	End cap R			
A61	27175254	Leg			
P901	253173Y or	△ AS-UC-7 #18,			
	253142HITSY	△ Power supply cord <D>			
	253164Y or	△ AS-CEE,Power supply cord			
	253175Y	△ <P/W>			
	253148	△ AS-SAA,Power supply cord <Q>			
S902	25065123	△ NSS-1258P, Voltage selector switch <W>			

NOTE: THE COMPONENTS IDENTIFIED BY MARK △  
ARE CRITICAL FOR RISK OF FIRE AND  
ELECTRIC SHOCK. REPLACE ONLY WITH  
PART NUMBER SPECIFIED.



BAND1	BAND0	REGION	BAND	FREQUENCY RANGE	CH. SPACE
0	0	U.S.A.	FM	87.50-108.00MHz	50kHz
			AM	530-1710kHz	10kHz
0	1	EUROPE 1	FM	87.50-108.00MHz	50kHz
			AM	522-1611kHz	9kHz
1	0	EUROPE 2	FM	87.50-108.00MHz	50kHz
			AM	531-1602kHz	9kHz
1	1	JAPAN	FM	76.0-90.0MHz	100kHz
			AM	522-1611kHz	9kHz

Terminal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Electrode	F	F	NP	9G	NP	NP	NP	NP	NP	NP	NP	8G	NP	NP	8G	P(0)
Terminal No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Electrode	7G	7G	P(3)	6G	6G	PT	P(8)	5G	P(1)	P(0)	4G	P(1)	NP	4G	P(2)	
Terminal No.	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	
Electrode	3G	P(3)	P(6)	3G	3G	2G	2G	P(8)	4G	P(6)	P(1)	1G	NP	F	F	

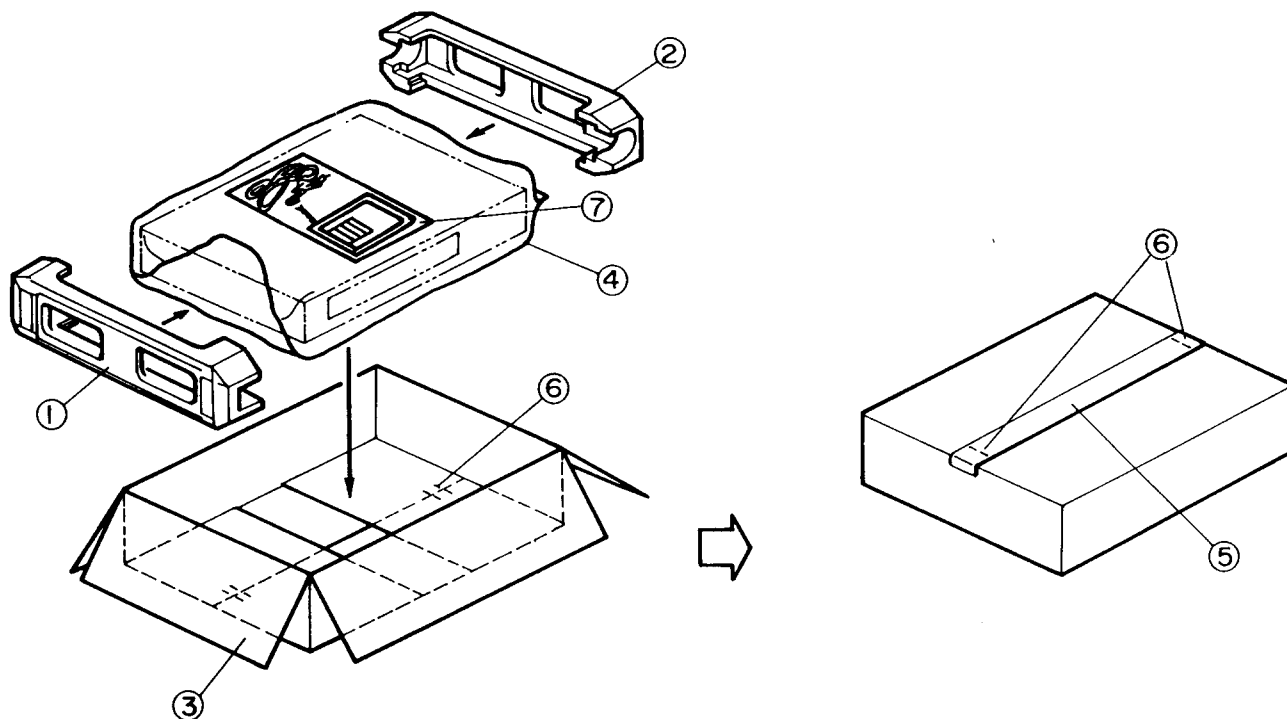
Note: F:Filament  
G:Grid  
P:Anode  
NP:No pin

## Terminal Descriptions

Pin No.	Symbol	Description						
1	Sd	Segment and key scan output terminals. "H" when active.						
2	Sc							
3	Sb							
4	Sa							
5	POFF	This is the input terminal for detection of the stoppage of electric current. "L" when the stoppage of electric current.						
6	RF IN	RF mode input terminal. <table><tr><td>RF IN</td><td>RF MODE</td></tr><tr><td>L</td><td>LOCAL</td></tr><tr><td>H</td><td>DX</td></tr></table>	RF IN	RF MODE	L	LOCAL	H	DX
RF IN	RF MODE							
L	LOCAL							
H	DX							
7	SYS OUT/ SYS EN	System code output terminal. "L" when active. Initializing input terminal when the power turns on.						
8	STEREO	Stereo broadcast detection input terminal. "L" when stereo broadcast.						
9	SYS IN	System code input terminal. "H" when active.						
10	SD	Broadcast detection input terminal. "L" when active. Control the stop of auto tuning and output TU MUT(#19).						
11	NOISE	Noise detection input terminal. Not used.						
12	PROTECT	Protection circuit operation detection input terminal. Not used.						
13	POWER	Power control output terminal. Not used.						
14	RELAY	Speaker relay control output terminal. Not used.						
15	PHONO	Phono control output terminal. Not used.						
16		Not used.						
17	MODE	Initializing input terminal for operation mode setting.						
18	MODEL	Initializing input terminal for model setting of receiver.						
19	TU MUT	Muting output terminal. "H" when active.						
20	SEL MUT	Audio muting output terminal. Not used.						
21	K0	Key scan input terminals. "H" when active.						
22	K1							
23	K2							
24	K3							
25	PLL	Connect to the terminal CE of PLL IC(LM7001 Q703).						
26	CL	Connect to the terminal CL of PLL IC(LM7001 Q703).						
27	DATA	Connect to the terminal DATA of PLL IC(LM7001 Q703).						
28	SEL	Not used.						

Pin No.	Function	Description
29	IC	Internal connected.
30	X1	Ceramic oscillator connection terminal for main system clock.
31	X2	Connect to the 4.19MHz ceramic oscillator.
32	VSS	Ground terminal.
33	XT1	Ceramic oscillator connection terminal for sub system clock.
34	XT2	Not used.
35	BAND0	Initializing input terminal for region setting of FM band.
36	BAND1	
37	AM 10K	Initializing input terminal for region setting of AM band.
38	PRESET	Initializing input terminal for operation mode setting.
39	RESET	Reset input terminal. "L" when active.
40	D1	
41	D2	
42	D3	
43	D4	
44	D5	
45	D6	
46	D7	
47	D8	
48	D9	
49		Not used.
50	Sn	
51	Sm	Segment output terminals. "H" when active.
52	Sl	
53	Sk	
54	S.TONE	SELECTIVE TONE indication output terminal. Not used.
55	S.TONE	SELECTIVE TONE control output terminal. Not used.
56	VLOAD	Pull-down resistor connection terminal of FIP controller/driver.
57	VPRE	Power supply terminal of output buffer of FIP controller/driver.
58	Sj	
59	Si	
60	Sh	Segment and key scan output terminals.
61	Sg	"H" when active.
62	Sf	
63	Se	
64	VDD	Power supply terminal. (+5V)

# PACKING VIEW



REF. NO.	PART NO.	DESCRIPTION
1	29091454	Pad L
2	29091455	Pad R
3	29052337AY	Master carton box <B>
	29052473	⊙ Master carton box <B>
	29052419Y	Master carton box <S>
	29052474	⊙ Master carton box <S>
4	291000374A	650×850mm, Styrene bag
5	29110071	Damplon tape
6	282301	Sealing hook
7	Accessory bag ass'y	
	29341691AY	Instruction manual <D>
	29341692Y	Instruction manual <P/W/Q/C>
	292111Y	FM antenna <D/W>
	292112Y	FM antenna <P/Q>
	232140	NMA-3057, AM loop antenna
	2010098A	Connection cord
	2010200	Remote control cord
	25065448	FM antenna adaptor <F/W/Q>
	25055018	CV-K-1, Conversion plug <W>
	29365019A	Warranty card <N>
	29365024A	Warranty card <F>
	29358002J	Service station list <N>
	29100097	350×250mm, Styrene bag
	29100107	Styrene bag for warranty card <F>

NOTE: <B>: Black model only  
 <S>: Silver model only  
 <D>: 120V model only  
 <P>: 230V model only  
 <Q>: 240V model only  
 <N>: U.S.A. model only  
 <F>: French model only  
 <W>: Worldwide model only  
 <C>: Canadian model only  
 ⊙: Made in Japan



FM Section

Preparation

• Input  
FM mono: 1kHz, 75kHz dev., 60dB/μV (65dB)  
FM stereo: 1kHz, L+R 67.5kHz dev.; Pilot signal 19kHz  
7.5kHz dev.  
400Hz, 30% mod.,

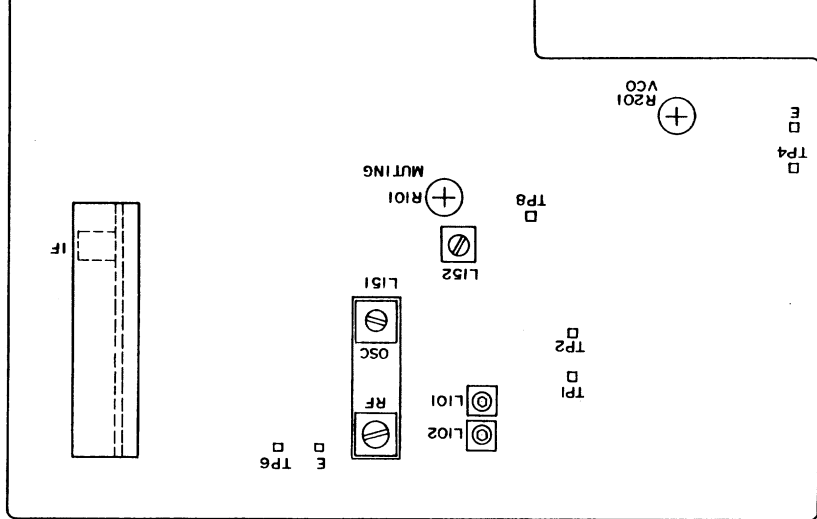
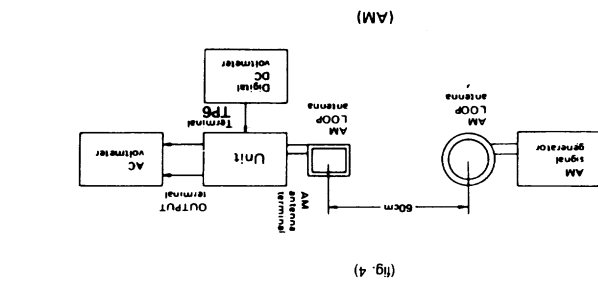
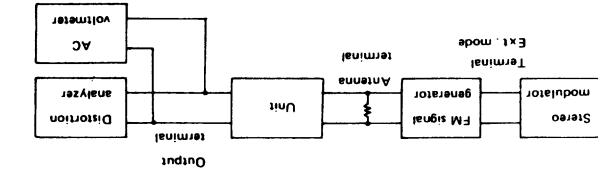
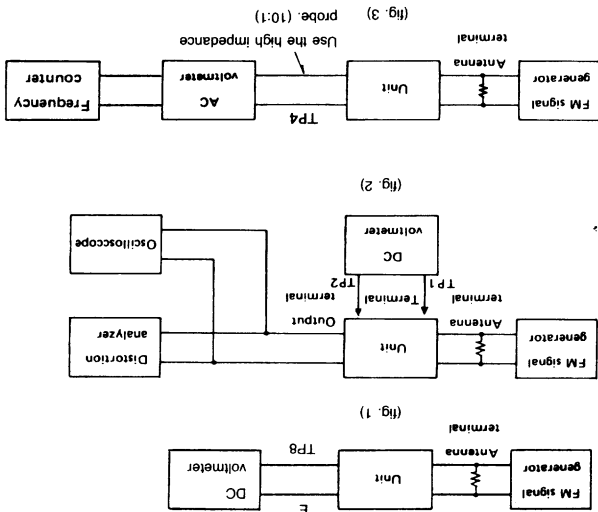
Reference specifications		Tuned voltage		FM		Stereo indicator level	
AM	530kHz(522kHz)	1710kHz(1611kHz)	7.6±0.5V (7.2±0.5V)	1.3±0.4V	Less than 68dB/m	Less than 16dBμ	12±4dBμ
FM	87.5MHz(87.9MHz)	108MHz(107.9MHz)	1.6±0.5V	12±2dB	35±10kHz	Auto stop level	Muting level
FM	108MHz(107.9MHz)	108MHz(107.9MHz)	8.0±0.5V	12±2dB	35±10kHz	Muting width	Muting level
FM	108MHz(107.9MHz)	108MHz(107.9MHz)	8.0±0.5V	12±2dB	35±10kHz	Muting width	Muting level

Item	Step	Connection of instrument	Fig. 1	Fig. 2	Fig. 2	Fig. 3	Fig. 4	Stereo Distortion
Front end	1	99.1 MHz, 1 kHz	75 kHz dev.	65 dB (60 dB μ)	99.1 MHz, 1 kHz	75 kHz dev.	65 dB (60 dB μ)	Stereo Distortion
	2	25.2 dB (20 dB μ)	75 kHz dev.	65 dB (60 dB μ)	99.1 MHz, 1 kHz	75 kHz dev.	65 dB (60 dB μ)	
FM IF	1	99.1 MHz, 1 kHz	75 kHz dev.	65 dB (60 dB μ)	99.1 MHz, 1 kHz	75 kHz dev.	65 dB (60 dB μ)	Muting Level
	2	25.2 dB (20 dB μ)	75 kHz dev.	65 dB (60 dB μ)	99.1 MHz, 1 kHz	75 kHz dev.	65 dB (60 dB μ)	
VCO	1	99.1 MHz, 1 kHz	75 kHz dev.	65 dB (60 dB μ)	99.1 MHz, 1 kHz	75 kHz dev.	65 dB (60 dB μ)	Stereo Distortion
	2	16.2 dB (11 dB μ)	75 kHz dev.	65 dB (60 dB μ)	99.1 MHz, 1 kHz	75 kHz dev.	65 dB (60 dB μ)	

AM Section

Step	AM SG output	Tuned frequency	Output indicator	Adjust point	Adjust for
1	522 kHz	Digital DC	L151	OSC	1.3 ± 0.1 V
2	603 kHz, 400 Hz	30% mod. 60 dB/m	603 kHz	AC	Maximum
3	999 kHz, 400 Hz	30% mod. 60 dB/m	999 kHz	AC	Maximum

( ): 10 kHz step model



# PRINTED CIRCUIT BOARD-PARTS LIST

## MAIN CIRCUIT PC BOARD (NARF-4098-3/3A/3B)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs			Capacitors	
Q104	22240039	LA1266	C155,C156	354761009	10 $\mu$ F,35V,Elect.
Q201	22240242	AN7470	C158	374723334	0.033 $\mu$ F $\pm$ 5%,50V,Plastic
Q703	22240090	LM7001	C159	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
Q901	222780125NEC	78M12HF	C160	354761009	10 $\mu$ F,35V,Elect.
	Transistors		C201	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
Q101	2211723	2SC1923-O	C202	354742209	22 $\mu$ F,16V,Elect.
Q102	2210746	2SC945A-P <P/W>	C203	354744719	470 $\mu$ F,16V,Elect.
Q103,Q701	2211255 or	2SC1815-GR or	C205,C206	374721824	1800pF $\pm$ 5%,50V,Plastic <D>
	2213284	2SC1740S-R		374721224	1200pF $\pm$ 5%,50V,Plastic <P>
Q202	2211455 or	2SA1015-GR or		374721524	1500pF $\pm$ 5%,50V,Plastic <W>
	2213354	2SA933S-R	C208,C209	354761009	10 $\mu$ F,35V,Elect.
Q203,Q204	2212794	2SD1468-R	C210	370134714	470pF $\pm$ 5%,100V,APS
Q702	2212445	2SK365-GR	C211	354780109	1 $\mu$ F,50V,Elect.
Q704,Q705	2213090	DTA114YS	C212	354780339	3.3 $\mu$ F,50V,Elect.
Q706	2212600	DTA124ES	C213	354782299	0.22 $\mu$ F,50V,Elect.
	Diodes		C215,C216	354742209	22 $\mu$ F,16V,Elect.
D101,D102	223132	1K60	C217	354781099	0.1 $\mu$ F,50V,Elect.
D202,D203	223163	1SS133	C701	354782299	0.22 $\mu$ F,50V,Elect.
D701	224450562	MTZ5.6B	C702	354780229	2.2 $\mu$ F,50V,Elect.
D702-D704	223163	1SS133	C703,C704	374721034	0.01 $\mu$ F $\pm$ 5%,50V,Plastic
D903-D905	22380032	1SR139-100	C706	354722219	220 $\mu$ F,6.3V,Elect.
D906	224450562	MTZ5.6B	C903	354761029	1000 $\mu$ F,35V,Elect.
D907	224450623	MTZ6.2C	C905,C907	354761009	10 $\mu$ F,35V,Elect.
D908	224452704	MTZ27D	C909	354772219	220 $\mu$ F,63V,Elect.
D909,D910	22380032	1SR139-100	C910,C911	354764709	47 $\mu$ F,35V,Elect.
D911	224451503	MTZ15C	C912	354761009	10 $\mu$ F,35V,Elect.
	Coils & Transformers		C913	354762219	220 $\mu$ F,35V,Elect.
L101	233401	NMIF-4072		Resistors	
L102	233402	NMIF-4073	R101	5210070 or	N06HR100KBD or
L151	232148	NMRF-7050		5210221	N06HR100KBD,Semi-fixed
L152	232139	NMIF-4062	R118	442522734	27k $\Omega$ $\pm$ 5%,1/2W,Metal
L201	233383	NMC-6070 <P/W>			oxide film
L202,L203	233355A	NMC-4059	R201	5210062 or	N06HR4.7KBD or
	Front end			5210216	N06HR5KBD,Semi-fixed
U001	240088	FE337-A07<D>	R903	442521214	120 $\Omega$ $\pm$ 5%,1/2W,Metal
	240089	FE415-G11 <P/W>			oxide film
	Ceramic filters		R905	441629114	910 $\Omega$ $\pm$ 5%,1W,Metal
X101,X102	3010071	SFE10.7MA5 <D>			oxide film
X101-X103	3010137	SFE10.7MMK <P/W>		Terminals	
X151	3010123	SFZ-450JL	P101	25060085	NTM-4PDMN29 <D>
X152	3010076	BFU-450C		25060117	NTM-2PDMN051 <P/W>
	X'tal		P102	25045307	NPJ-2PDBL166 <D>
X701	3010141 or	XTL-7.2M		25045333	NPJ-2PDBL185 <P/W>
	3010158		P103	25045330	NPJ-2PDBL184
	Capacitors			Switch	
C001	354741019	100 $\mu$ F,16V,Elect.	S710	25065286	NSS-22112,Band <W>
C108,C113	354742209	22 $\mu$ F,16V,Elect.			
C110	354780109	1 $\mu$ F,50V,Elect.			
C112	354780339	3.3 $\mu$ F,50V,Elect.			
C115	354784799	0.47 $\mu$ F,50V,Elect.			
C152	354741019	100 $\mu$ F,16V,Elect.			
C154	354780479	4.7 $\mu$ F,50V,Elect.			

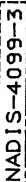
NOTE:&lt;D&gt;:120V model only

&lt;P&gt;:230V and 240V models only


&lt;W&gt;:Worldwide model only

## C

NARF-4098-3

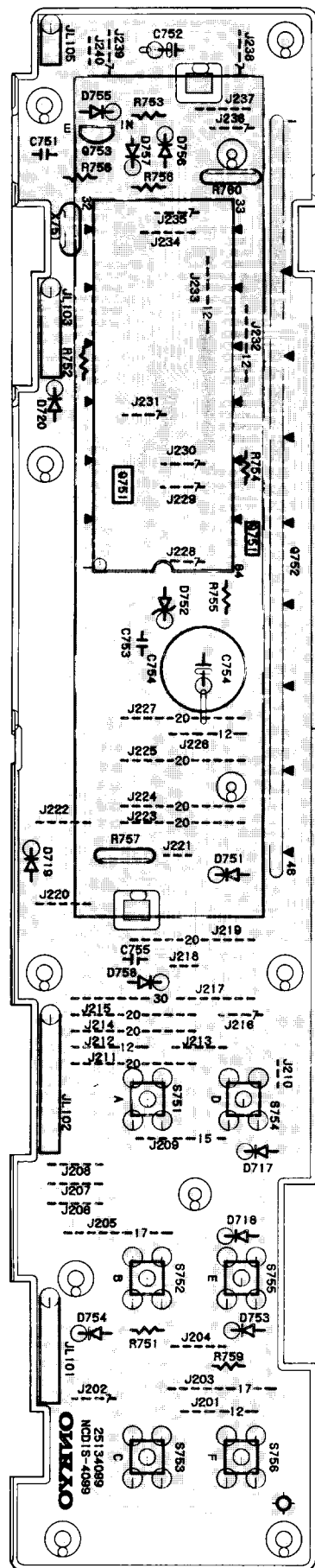


**NOTE**

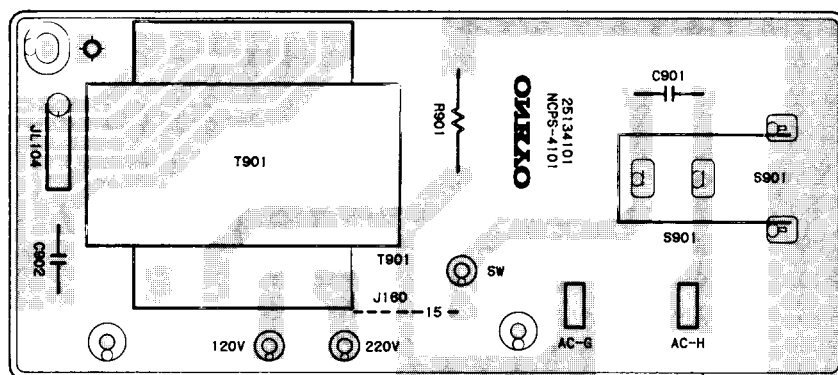
- COMPONENTS IDENTIFIED BY MARK  ARE CRITICAL FOR SAFETY.
- REPLACE ONLY WITH PART NUMBER(S) SPECIFIED.
- VOLTAGE MEASURED WITH VOLTMETER (○ IS DC VOLTAGE, (NO INPUT SIGNAL).
- ALL TRANSISTORS ARE EQUIVALENT TO 2SD161 OR UNLESS OTHERWISE NOTED.
- ALL PN TRANSISTORS ARE EQUIVALENT TO 2SD1615-OR UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (⊕ ARE IN  $\mu$ F,  $\text{mF}$ ).
- ALL CAPACITORS ARE IN PFD50 UNLESS OTHERWISE NOTED.
- ALL RESISTORS ARE IN OHMS 1/4 WATT UNLESS OTHERWISE NOTED.
- THE THICK LINES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS.
- EXCEPT WHERE SHOWN OTHERWISE, PRINTING SIDE OF BOARD FOR IMPROVEMENT.

# ONKYO CORPORATION

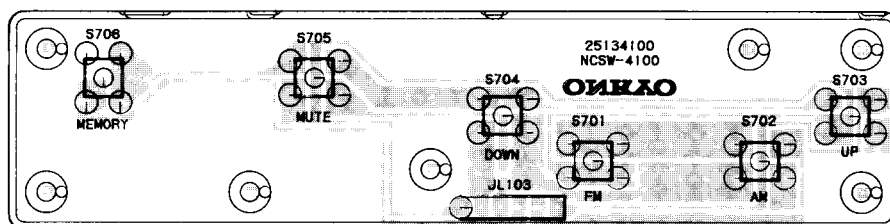
### PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



## DISPLAY PC BOARD



## POWER SUPPLY CIRCUIT PC BOARD



## SWITCH PC BOARD

## PRINTED CIRCUIT BOARD PARTS LIST

### DISPLAY CIRCUIT PC BOARD(NADIS-4099-3/3A/3B)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q751	22240406	$\mu$ PD75268CW-025,IC
Q752	212093	FIP9BTM8,FL tube
Q753	221282	DTC144ES,Transistor
D717-D720	223163	1SS133,Diodes
D751,D758	223163	1SS133,Diode
D752	224450913	MTZ9.1C,Zener diode
D753-D755	223163	1SS133,Diodes
C751	375524744	0.47 $\mu$ F,5%,50V,Plastic capacitor
C752	354780109	1 $\mu$ F,50V,Elect. capacitor
C753	375524744	0.47 $\mu$ F,5%,50V,Plastic capacitor
C754	3000057	0.1F,5.5V,Super capacitor
R757	49163104404	100kohm $\times$ 4,1/10W,Network resistor
R760	49163103404	10kohm $\times$ 4,1/10W,Network resistor
S751-S756	25035548	NPS-111-S510,Push switches
X751	3010163	CST4.19MGW,Ceramic oscillator
	27190818	Holder FL

## OPERATION SWITCH PC BOARD(NASW-4100-3)

CIRCUIT NO.	PART NO.	DESCRIPTION
S701-S706	25035548	NPS-111-S510,Push switches

**POWER SUPPLY CIRCUIT PC BOARD (NAPS-4101-3A/3B/3C)**

<b>CIRCUIT NO.</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
C901	3500065A	△ DE7150FZ103PAC400V/125V, IS capacitor
	273001216	△ Cover for C901 <P/W/Q>
T901	2300636UM	△ NPT-1102D,Power transformer <D>
	2300637UM	△ NPT-1102P,Power transformer <P>
	2300638UM	△ NPT-1102DG,Power transformer <W>
	2300639UM	△ NPT-1102Q,Power transformer <Q>
S901	25035636	△ NPS-111-L590P,Power switch
R901	431523355	3.3Ω,1/2W,Solid resistor <D>
	28175137	Insulator plate

NOTE:&lt;D&gt;:120V model only

&lt;P&gt;:230V model only

&lt;W&gt;:Worldwide model only

&lt;Q&gt;:240V model only

NOTE:THE COMPONENTS IDENTIFIED BY MARK △  
ARE CRITICAL FOR RISK OF FIRE AND  
ELECTRIC SHOCK.REPLACE ONLY WITH PART  
NUMBER SPECIFIED.

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